AMENDMENTS TO THE DRAWINGS

The attached sheet(s) of drawings includes changes to figs. 6-9. Figs. 6, 7, and 9 have been corrected to show "Conventional Art." Fig. 8 has been corrected to show "Prior Art."

Attachment: Replacement sheets

REMARKS

Claims 9-23 are present in this application. Claim 23 has been added. Claims 9 and 16 are independent claims.

Drawings

The Office Action objects to the drawings and alleges that Figures 6-9 should be designated by a legend such as Prior Art. Applicants provide herewith corrected drawings showing appropriate legends. Applicants request that the objection to the drawings be reconsidered and withdrawn based on the submitted corrected drawings.

Fig. 8 is labeled Prior Art, as it is described with respect to JP 1998-105074. Other Figs. 6, 7, and 9 are disclosed as being "conventional art," and as such are labeled "Conventional Art."

§ 103(a) Rejection – Merrill

Claims 9-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,160,663 (Merrill; which was provided with an IDS of May 8, 2008). Applicants respectfully traverse this rejection.

Summary of Problem/Solution of Present Invention

The present invention relates to solution of problems that Applicants have found to occur in large backlight units formed with a reflective polarizing sheet in addition to the conventional optical sheet formed on or between optical plates. ("Background of the Invention").

Due to various sources, static electricity produces an electric absorptive force between the adjacent optical sheets (specification at pages 6 and 7). Applicants have observed during testing that the optical sheets warp when the light source for the backlight unit is lighted. In particular, Applicants have determined that when thermal expansion occurs in a state that the optical sheets are adhered to each other due to static electricity, warps are formed on the adjacent optical sheets. (specification at page 7, second full paragraph).

The first optical sheet (i.e., reflective polarizing sheet) has different coefficients of linear expansion in two directions (specification at page 13, lines 3-4), while the adjacent sheet has thermal expansion coefficients that are approximately equal in each direction (specification at page 13, lines 13-14).

Applicants believed that in the case that the first optical sheet having different expansion coefficients in two directions, the expansion amount in the transmission axis direction with a larger coefficient of linear expansion caused the generation of warps. (specification at page 15, lines 4-7).

Subsequently, Applicants have developed embodiments of the present invention based on their understanding of the problem of warping occurring in the optical sheets. For example, Applicants determined that warps could be prevented by approximating the coefficient of linear expansion of adjacently arranged prism sheet in the direction corresponding to the transmission axis direction of the reflective polarizing sheet to that of the reflective polarizing sheet in the transmission axis direction. (specification at page 15, lines 7-12).

Thus, embodiments of the present invention covered by claim 1 are directed to a backlight unit (e.g., Figs. 1A and 1B) comprising

a first optical sheet (e.g., reflective polarizing sheet 6; specification at page 12, lines 24-28) having coefficients of expansion different between a first direction and a second direction in a plane with the coefficient of linear expansion in the first direction larger than that in the second direction (e.g., see Fig. 1B and specification at page 12, lines 11-16); and

a second optical sheet (e.g., prism sheet 7; specification at page 12, line 28 to page 13, line 2) that is an optical sheet different from the first optical sheet and that is disposed adjacently to the first optical sheet and in a separable manner (specification at page 12, lines 5-6) in a direction normal to the plane thereof, wherein, the coefficient of linear expansion of the second optical sheet in the direction corresponding to the first direction is approximated to the coefficient of linear expansion of the first optical sheet in the first direction (specification at page 25, lines 7-12).

Merrill

Merrill is directed to an assembly comprising a film bounded by a frame, the film having a first thermal expansion coefficient along a first direction parallel to the film and a second thermal expansion coefficient along a second direction parallel to the film, wherein thermal expansion of the film compared to that of the frame is greater along the first direction than along the second direction, and wherein the film has a shape at an ambient reference temperature different from that of the frame, the shape of the film being selected to reduce clearance while allowing sufficient room between the film and the frame for thermal expansion in the first direction for temperatures up to a predetermined elevated reference temperature. (Abstract).

Thus, Merrill is concerned with a shape of the film bounded by the frame at an ambient temperature and at an elevated reference temperature. Subsequently, the examples disclosed in Merrill describe a film and its relationship to the frame. Furthermore, Merrill defines "warping" as "buckling of the film in the thickness direction due to compressive stresses in the plane of the film resulting from contact between the film edges and the internal bounding edges of the frame." (col. 6, lines 18-21).

Thus, a problem that is of concern in Merrill is warping due to contact between the film edges and the internal bounding edges of the frame.

Differences over Merrill

The Office Action alleges that Merrill teaches a "backlight" as the light guide 108, teaches the claimed "first optical sheet" as the rcflective polarizer film 114, and teaches the claimed "second optical sheet" as the brightening film 112. The Office Action also states that Merrill does not expressly teach that the coefficient of linear expansion of the second optical sheet in the direction corresponding to the first direction is approximated to the coefficient of linear expansion of the first optical sheet in the first direction.

Instead, the Office Action states that: "Merrill further teaches that sheets 114, 112, 106, 110 may have anisotropic thermal expansion coefficients designed such that distortion due to thermal expansion of the sheets will be reduced." The Office Action concludes that "it would have been obvious to try various combinations of sheets with anisotropic thermal expansion coefficients to reduce distortion (e.g., warping) from thermal effects as Merrill identifies as beneficial."

Applicants submit that Merrill's "distortion" is not warping caused by differences in thermal expansion between adjacent sheets. Applicants submit that Merrill does not address the problem that is the subject of the present invention. Subsequently, Applicants submit that the claimed feature of "the coefficient of linear expansion of the second optical sheet in the direction corresponding to the first direction is approximated to the coefficient of linear expansion of the first optical sheet in the first direction," would not have been obvious to one of ordinary skill in the art in view of the teachings in Merrill.

According to M.P.E.P. § 2141.02(III):

> "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103." *In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969).

Merrill describes the problem of "distortion" as:

> "Distortion typically occurs when thermal expansion or contraction forces the film against internal bounding surfaces of the frame, thereby causing the film to buckle, or warp, in the z-direction normal to the display. To minimize warping of free-floating or loosely-secured films, there should be sufficient room, or clearance, within the frame to allow for differential thermal expansion. However, to maximize viewing area, the film should be cut to reduce clearance while maintaining room for thermal expansion." Merrill at col. 7, lines 54-62.

Subsequently, Merrill discloses various examples that describe a single sheet and its relationship to a frame. Only Example 2 describes more than one film. Example 2 pertains to the

construction as in Example 1, "but with additional light management films positioned beneath the film sample." However, even example 2 is concerned with the problem of clearance in the z-direction for the top most film, when additional films are positioned beneath the film sample (see col. 24, under "Example 2"). In particular, Merrill describes warping in the case of example 2, as:

> "Example 2 illustrates that warping can occur when too little clearance in the z-direction is allowed. Due to the asymmetry of the warping pattern and the presence of an imprint pattern in the film due to the flange, it was believed that this sample was pinched by the flange, and thus constrained from free movement during thermal cycling. This resulted in excessive compressive stresses and the film buckled out-of-plane." Merrill at col. 24, lines 15-22.

Applicants submit that there is no evidence in Merrill to suggest the need to provide adjacent optical sheets in which the coefficient of linear expansion of the second optical sheet in the direction corresponding to the first direction is approximated to the coefficient of linear expansion of the first optical sheet in the first direction in order to address a problem of warping caused by relationships between adjacent optical sheets.

For at least these reasons, Applicants submit that Merrill fails to teach the invention covered by claims 9 and 16, as well as respective dependent claims. Accordingly, Applicants submit that the rejection fails to establish *prima facie* obviousness and must be withdrawn.

In addition, claims 12 and 19 provide an arrangement in which the reflective polarizing sheet is the sheet that is nearest to the light source. Fig. 1 of Merrill shows reflective polarizer film 114 as being the film farthest from the light guide 108. The invention of claims 12 and 19 provides a structure in which color irregularity on the screen caused by contact of the reflective polarizing sheet 6 with the liquid crystal panel 8 can be reduced. (specification at page 22).

Applicants submit that Merrill fails to teach the features recited in claims 12 and 19. Accordingly, the rejection of claims 12 and 19 fails to establish *prima facie* obviousness and must be withdrawn.

New Claim

Claim 23 has been added. Claim 23 covers aspects of the second disclosed embodiment of the present invention found in claims 1 and 12. Applicants submit that new claim 23 is patentable over Merrill for at least the reasons above for claim 1.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Robert Downs** Reg. No. 48,222 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By Robert Downs #48222

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Attachments